

# NAVAL POSTGRADUATE SCHOOL MONTEREY, CALIFORNIA



## THESIS

***TAIWAN, ROC REGIONAL OPERATIONS CENTER IN  
ASIAN-PACIFIC***

by  
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and  
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June, 1996

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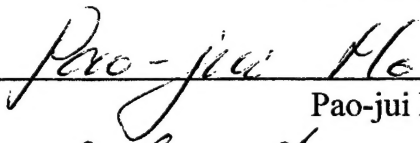

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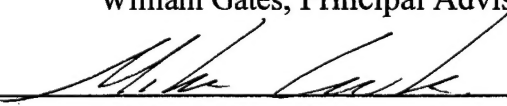
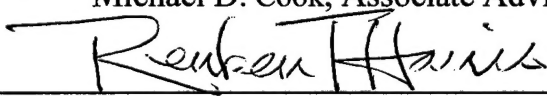
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## **ABSTRACT**

The purpose of this study is to examine the Taiwan, ROC policy for establishing Taiwan as a Regional Operations Center in Asian-Pacific market. The study addresses five questions; the definition of a regional operations center, services the center will provide, reasons for the government policy, significance of the policy, and the expected results of the policy. The study addresses the subject from a microeconomics, macroeconomics and international trade perspective. Finally, the authors present their conclusions and recommendations.



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## **I. INTRODUCTION**

### **A. BACKGROUND**

As regional economic blocs take shape, the Republic of China on Taiwan plans to develop Taiwan into an operations center for the Asian-Pacific region. Over the next ten years this development is expected to play a key role in the region's economic integration in the 21st century.

On the business level, Taiwan can serve as a stepping stone for local and multinational businesses to invest in and develop Asian-Pacific markets, including Southeast Asia and Mainland China. On the macroeconomic level, the ROC on Taiwan can become a strong base for developing trade and economic relations with Asian-Pacific nations. Taiwan is building a center for business activities, such as manufacturing, transshipment, finance, telecommunications, and media operations.

At the current development stage for the Asian markets, Taiwan has many advantages for becoming a regional operations center:

- A solid manufacturing base
- Abundant supply of high-tech manpower
- Geographically convenient position
- Attractive domestic market
- Outstanding managerial skills
- A well-developed industrial network of local enterprises

Furthermore, its cultural background is similar to that of Mainland China, which is potentially the world's largest market.

The plan for developing Taiwan into a regional operations center was drafted by the Council for Economic Planning and Development of the Executive Yuan and is based on expert evaluations. The plan involves two parts: a macroeconomic adjustment program

and a plan to develop specific operations centers. The macroeconomic adjustment scheme is aimed at restructuring the overall economy to handle high value-added manufacturing, air and sea cargo and passenger transportation, and professional services.

## **B. THE DEFINITION OF OPERATIONS CENTER**

The definition of an operations center is based on the following two perspectives:

### **1. The Enterprise Perspective**

All enterprises, either local or multinational, using Taiwan as their base and investing in and the developing the Asian-Pacific market, including Southeast Asia and Mainland China, are automatically categorized in the sphere of operation center enterprises.

### **2. The Macroeconomics Perspective**

Using Taiwan as the base to develop omnidirectional trade relationships with all nations in Asian-Pacific area, promotes Taiwan as the focal point of manufacturing, transportation, financial, telecommunications, and media centers operation.

## **C. THE REASON FOR AND SIGNIFICANCE OF THE ROC POLICY**

In terms of Taiwan's macroeconomics, the 1980s marked an unprecedented era of market misalignment, reflected by a substantial growth in Taiwan's trade surplus. This surplus is either an indication of excess savings or insufficient reinvestment. Compelled by the effects of sustaining growth in the trade surplus, beginning in mid-1980s, the government loosened controls on foreign exchange. The result of this policy was a large-scale appreciation of NT dollars from a ratio of 1 US \$ to 40 NT \$ in the mid-1986 to a ratio of 1 US \$ to 26 NT \$ in 1989. This is an approximate 54% appreciation, but if judged by the real exchange rate, this appreciation amounts to approximately 10%. This is the primary driving force for the readjusting Taiwan's economic structure.

Concurrently with the appreciation of the NT \$, the rise of Taiwan's labor costs has weakened the competitive edge of labor intensive goods and services on the global markets. To cope with these market context changes, local manufacturing industries have

made adjustments by reorganizing their manufacturing structures, including: increasing foreign investment, expediting process automation, inducing advanced technology and know-how, product innovation, and reshaping business management style. Manufacturers have shifted from old-fashioned production processes, using old-time labor intensive goods and services, to emphasizing brand names and distribution networks. Taiwan has shifted gears from a capital intensive industrial base to the changing context where managerial capabilities and conditions take on a bigger role. This is necessary if Taiwan is to become the regional operations center of the Asian-Pacific region.

#### **D. THE EXPECTED VALUE**

When discussing value, what is really meant is what good will the development bring? The common belief is that it is human nature to pursue anything that is good, provided the cost is reasonable. But good/value alone is not enough, only when the value realized is substantial or material is the return reasonable, because people want something tangible, property rights, utility etc. In this respect, unfortunately, there is no concrete formula to actually measure, quantify or represent the expected value. Therefore, the value or the return on the Regional Operations Center in Asian-Pacific can only be broadly defined and is in the following economic spheres:

##### **1. Macroeconomics Sphere**

Other things constant, once the desired goals of each different stage<sup>1</sup> of the operation center concept are achieved, the national welfare (in GNP terms) no doubt will

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<sup>1</sup> In the 1st stage--1995 to 1997-- emphasis has been placed on 1) improving current economic infrastructures to foster all necessary conditions for the development of ROC-in-AP 2) Launching small-scale specialized operations centers based on current capabilities.

In the 2nd stage--1997 to 2000 -- responding to the situation of Hong Kong being taken back by the People's Republic of China in 1997, large-scale operations centers will be initialized and the overall economic infrastructure will be improved.

The 3rd stage--by 2000 -- will include full liberalization of economy, based on free trade, and the completion of all major projects. The nation will strengthen its position as ROC-in-AP to further expand its economic sphere.

increase beyond its current level (1993, US \$ 220 billion). It follows that the per capita income will increase to some appreciable extent and unemployment will decrease. This goal can only be achieved through properly implementing the policy and efficiently using resources.

## **2. Political-Economics Sphere**

This area requires the most attention in terms of its significance, because this is the area where rational ignorance effects hold true. Everyone understands that without a stable political environment there simply will not be any economic growth. Also known is the fact that recently the political situation in Taiwan has deteriorated. Under the name of the people, congressmen violently fight against each other and disregard critical legislative work while relevant laws need to be enforced. This deterioration exposes one simple fact, based on the following scenario:

The world knows that Taiwan is constantly under the threat of a military invasion by Mainland China. Though Taiwan boasts a formidable defense force, rationally, not a single person in Taiwan would wish to use that force to defend the island. What shall the Taiwanese people do then, to avoid or eliminate the threat once and for all? Rejoin the United Nations or other powerful international organizations? This is not feasible given political realities. The only alternative is to stabilize the political situation so economic growth can be achieved, then use Taiwan's strategic location and the country's prosperous economic growth for protection. Along with the global trend of multi-national business decentralization, this leads to an unprecedented opportunity to attract foreign investment from the rest of the world.<sup>2</sup> Once the operation center concept becomes a reality, the weight of international business centered in Taiwan will naturally constitute a

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<sup>2</sup> Since 1992, the Asian-Pacific region, especially Eastern Asia, has become the fastest economic growth area measured on a global scale. The area gross product accounts for 20.7 % of the global economy. The overall population in Asian-Pacific region is well over two billion and aggregate GNP is one-half of the world. Foreign trade is 40 % of the world. Taiwan, with its foreign investment in this area (over US \$ 30 billion, including Mainland China), is already a major player.

significant counterbalance to the threat posed by Mainland China. Intuitively, this is the true value returned from the policy and must be vigorously pursued by the Taiwanese people and shared by all.

#### **C. LIMITATIONS OF THIS STUDY**

This study will only address one portion of the operations center policy of the ROC. This sector is a manufacturing center concept. Only this sector is addressed because it is simpler to model and has a more direct impact on the economy of the ROC.

#### **D. ORGANIZATIONS OF THIS STUDY**

This chapter is an introduction, in Chapter II the authors' outline the reasons and significance of the operations center policy. Additionally, Chapter II presents a short section on the expected return to the ROC from this policy. Chapter III is an analysis of the macroeconomic aspects of this policy. Chapter IV presents microeconomic models of the various aspects of the ROC's macroeconomic policies. Chapter V presents the authors' conclusions and recommendations.



## **II. ISSUES**

### **A. MACROECONOMICS PERSPECTIVE**

From the macroeconomic perspective there are four major categories addressed in the government plan . [Ref. 1]

#### **1. Promote Free Trade and Liberalize Capital Investment**

- For goods transactions, the government should lower tariffs as well as other non-tariff barriers. In the plan, by 1999 the expected tariff will be decreased to 5 % from its current rate of 6.52 %; in terms of real tariffs, this would be a value of 4 %. Local trade restrictions should be completely eliminated; - automobile imports and agriculture products will be assigned some quota limitations.
- For services, domestic markets, such as financial, insurance, telecommunications, transportation, legal, and accounting, will be expanded and opened to foreigners. At the same time, legal restrictions of this type will also be eliminated.
- The approval procedures for foreign capital investment in Taiwan will be simplified.
- Foreign investment abroad will be encouraged by providing guidelines and modifying related tax rules.
- Government bureau level organizations will be redesigned to achieve the desired results stated previously.
- Restrictions will be loosened on cross-straits investment with (Mainland China).

#### **2. Lift Entry/Reentry Barriers to Foreigners**

Review and modify current permits for foreigners working in Taiwan, eliminating all unnecessary restrictions. This will be achieved through several measures, including:

- Simplifying scrutiny procedures for short-term stay foreigners.



- Increasing the number of ground visa countries and establishing no visa countries.
- Granting multi-business personnel turnover and in-country job transfer.
- Granting working permits to domestic firms employing foreign technical persons without ratio limitation for three-year, with extensions up to five years.
- Set up a special institute responsible for entry/reentry barriers.

### **3. Loosen Restrictions on Entry/Reentry of Capital Investment**

- Revise foreign exchange stipulations, establishing an effective declaring system to liberalize foreign exchange.
- Loosen the restrictions on capital entry for Taiwan nationals operating businesses abroad.
- Lift the ceiling on capital exports for both households and businesses.

### **4. Establish Legal Environment**

Establishing a legal environment is a must for an information technology society.

- Liberalize telecommunication.
- Open the broadcast/media market to competition and provide regulatory measures.
- Establish legal stipulations to facilitate information and data flow.
- Further enhance and secure intellectual property rights.
- Further enhance and protect personal privacy rights.

## **B. INTERNATIONAL TRADE PERSPECTIVE**

Looking from the perspective of international trade, traditional theories view trade as essentially a way for countries to benefit from their differences. Since World War II, however, a large and generally growing part of international trade consists of exchanges that cannot be easily attributed to underlying advantages of the countries that export

particular goods. Instead, trade seems to reflect arbitrary or temporary advantages resulting from the economies of scale or shifting leads in close technological races. [Ref. 2, p. 7] Though the above statement holds true in interpreting some aspects of international trade, the generic conditions for any nation determined to pursue national wealth remain largely the same and depend crucially upon gains from:

- Specialization and Trade
- Expansion in the Market Size
- The Discovery of Better Ways of Doing Things

Governments that respect property rights and freedom of exchange, and follow monetary (and fiscal) policies consistent with relatively stable prices, establish the foundation for economic growth. This is the strategy that resulted in the "economic miracles" of West Germany and Japan following World War II. This is also the strategy followed by the growth economies of the 1980s. [Ref. 3, p. 543]

In a decentralized and globalized world, there seems to be a trend of multi-business practices. The lessons of economic confrontations between major economic super powers should be used to guide Taiwan's economic development. For ROC, technology is one of the most significant factors that requires special attention. In many industries, competitive advantage seems to be determined neither by underlying national characteristics, nor by the static advantages of large-scale production, but rather by the knowledge generated by firms through R&D and experience. [Ref. 2, p. 8] Most importantly, imperfect competition is the name of the game in international trade and there are no easy answers to trade disputes or even confrontations. An emergent consensus is that a collaborative effort is a must in solving trade issues. An ever increasing level of complex interactions are apparent in international trade. Fortunately, this has compelled a realization that the "zero-sum" game aimed at substituting one country for another in trade will eventually hurt both countries. Given the current magnitude of international trade, there is simply no way for a single party to cope with

such complexity and diversity. No matter how strong the party is or appears to be, the party is dependent on the mutual or collective welfare of international trade. The gains of this trade should be shared and enjoyed by all parties.

In summary, given the present and future context of global economic trends, the government must pay special attention to lessons learned from developed countries and avoid the history of the developed countries' trade relationships. The authors have concluded that anything that begins with "I want..." in trade negotiations should and must end up with consideration of "what if others (could be things too)...." Countries must simply make an effort towards "we want" for anything that is positive to result.

### III. ANALYSIS ON SPECIFIC MACROECONOMIC ISSUES

Chapter I discussed some major reasons why the government, and of course, the people of Taiwan, ROC, decided to undertake such a huge project. Chapter II briefly touched on some major issues covered in the grand scheme of ROC-in-AP. Though decisions have been made already, the process has never been clearly explained to the public. Of course, the academic community of Taiwan and some foreign consulting firms have made their contributions in the design process. Nevertheless, this does not mean that there is no margin to reexamine the fundamental criteria of this design. Reexamination is a continuing requirement and must be considered in the collective decision-making process upon which the future of twenty one million people depends. This is particularly true in the light of a historically poor communication between the people and the government of Taiwan, ROC.

Broadly speaking, any major government economic plan inevitably involves stakeholders like: its own nationals, domestic industries, and foreign investment. In this particular case and under the current economic context, the participation of all major stakeholders is a must in order to achieve the desired results. Therefore, how these stakeholders can be encouraged to vigorously participate and support the plan will determine its success. How can we determine and define those criteria that all stakeholders consider? Well, if a sound political environment definitely can be determined as the common factor, then the will of the people to support this huge project can be considered as the driving force. As to the part of the interaction between the government and the public, a sound collective decision-making process would be the force that ensures equity, and prevents rent-seeking opportunities. When combined with sound long-term industrial policy that encourages both domestic and foreign investment, all these guarantee a greater potential for success.

## **A. SOUND POLITICAL ENVIRONMENT**

It would not be farfetched to say that without a sound, stable political environment there simply cannot be any economic achievement. In this sphere two topics are discussed: local political stability and political-economic interactions with Mainland China.

### **1. Local Political Stability**

The commonly conceived notions of government corruption, incompetent in enforcing the law, and the *black-and-gold* hook-up with politics are the worst nightmares of the people in Taiwan. This significant change started on June 23rd, 1987, which marked a new milestone in the history of Taiwan, ROC, when the Emergency Decree in Taiwan was abolished and replaced formally by the National Security Law. This was considered as a major step towards a true democracy in the ROC. The people in Taiwan thus enjoy a greater freedom to pursue their individual interests. But this combined with an improved living standard and substantiated by higher incomes seems to have pushed the nation toward a path of no-return. Why? There are several reasons.

First, once the people in Taiwan have been emancipated from an old, constricted political framework, everybody is eager to claim his right to speak and be heard. At the same time, new political frameworks are yet to be established and experience is yet to be learned. This freedom has been expressed through a series of extensive elections, either for governmental posts or different levels of congress. This means more seats in the congress, decentralization of part of the central government's functions to local governments, and diversification of society. All the above phenomenon fit well into the current context, but a corresponding infrastructure is needed to support the new government functions. This framework takes time to create and establish. The framework must evolve through legislative procedures in order to be effective.

Secondly, along with the realization of people's power to votes, the ruling party, KMT, in order to stay in power, has either directly or indirectly become connected with the underworld and business tycoons to secure its seats in the congress. This introduces

the so-called *black-and-gold* political era. *Black* means mafia and *gold* means business tycoons. Sadly speaking, the traditional values, which had contributed so much to the economical development and achievement of Taiwan, are lost largely due to this connection. As a result, the political situation in Taiwan is deteriorating rapidly. If no improvements are made within a short period of time, economic setbacks once combined with other political catastrophes will undoubtedly destroy the nation. Who is responsible for this? Who can change it? The answer is the people of Taiwan.

## **2. Political-Economical Interactions with Mainland China**

It is an internationally well known fact that Taiwan is constantly threatened by Mainland China. The mainland has never renounced the use of force to take over Taiwan. In the pursuit of the ROC-in-AP, the political stability in Mainland China is a vital factor. Under the Four Modernization Plan, Mainland China has been vigorously pursuing a *socialist market economy* aimed at overhauling the overall economical system to lifting the living standard of its people. Foreign investments in Mainland China provides them with the needed capital for all kinds of infrastructure construction. Among them, Taiwan businessmen have invested US\$1.7 billion in Shenzhen, Guangdong Province as of the end of 1995 [Ref. 4, p. 86]. Taiwan's investment is only second to Hong Kong investment in the mainland.

Judging solely from the dollar amount and the magnitude of Taiwan's business interactions with Mainland China, we could easily comprehend the effect of their political stability upon Taiwan's economical development. Given the current situation, Taiwan's capital investments not only expedite PRC's modernization reforms but also fit into the mainland's political purposes of tilting the economic balance by absorbing Taiwan's capital, also to their advantage.

The PRC has consistently expressed that it is not in their interest to take over Taiwan by force, provided that there is no advocacy of Taiwan's independence movement. While both parties across the Taiwan Strait are working toward the same goal through bilateral competition of political and economical reform, one vision remains in

the front of our thoughts: if Mainland China fails in their economical reform, Taiwan will also fail. If Taiwan fails, Mainland China may still survive. This fits particularly well within the terms of the Taiwan government's grand scheme to become the ROC-in-AP. This is something that has either been ignored purposely by the policy-making people or has been indulged unconsciously by the public, or both. Unless the people of Taiwan truthfully face the situation and urge the situation be handled through proper legislation we, the people in Taiwan, will eventually bear the consequences without knowing why and how we failed in striving to make our dream come true.

## **B. SOUND COLLECTIVE DECISION-MAKING PROCESS**

From past experiences we've learned that in expensive government projects, rent-seeking activities will occur from time to time. Special interest groups, allied with either legislators or public bureaus, will want to divert limited resources to their advantage at the expense of public interest. Rent-seeking will also increase when governments become heavily involved in erection trade barriers, mandating employment benefits, prohibiting various types of agreements, providing subsidies, fixing prices, and levying discriminatory taxes (taxes unrelated to the provision of public services to the taxpayer). In order to keep rent-seeking activities at bay, first, an open public collective decision-making process that brings out issues into the open must be enforced and upheld by law. Then the public can monitor or gain access to the decision-making process of vital government projects. Secondly, the legislative bodies should faithfully ensure that the sun-shine laws are followed by all important government officials. This limits the room for rent-seeking maneuvering. And lastly, the legislative bodies should ensure that the government enforces tighter control over tax evasion activities and publicize the tax evasion list on a quarterly basis. When all of the aforementioned mechanisms are properly and faithfully enforced, the costs of rent-seeking activities will be high. In this regard, the connections of different interest groups (officials-underworld-business tycoons) will be reduced. The result is that the quality of government policy will improve and fewer resources will flow into rent-seeking activities.

### C. THE WILL OF THE PEOPLE

Some people may argue that it is hard enough to pool people's opinion least of all to identify their *will*. But in this domain, common sense prevails, given a justifiable cause, all we need is proper tools to motivate, direct, and converge people's minds and cause them to act accordingly. That tool is *incentive*. In this case, what incentive should be provided to the people? And what are the incentives? Besides those discussed factors of *local political stability*, *sound collective decision-making process*, from the market perspective, policy makers should take into account both the supply and demand side and establish mechanism that enforces *equity*. Other things remain constant, from the view of the business sector, input costs must be reasonably low, and production processes should focus on exploiting learning and scale economies. On the part of the household sector, stable prices certainly signal a prosperous vision for the future. Nevertheless, there is one other critical factor involved in all sectors--efficiency of government operations. Unlike the private sector--where competition is the driving force for efficiency, public-sector enterprises confront an incentive structure that is less conducive to operational efficiency [Ref. 3, p. 622].

Since public officials and bureau managers spend other people's money, they are likely to be less conscious of cost than they would be with their own resources. Without a need to compare sales revenues to costs, there is no test with which to define economic inefficiency or measure it accurately, much less to eliminate it. The perverse incentive structure of a bureaucracy is bound to have an impact on its internal efficiency. But this does not mean that we could not do anything about it. On the contrary, this gives us more reason to place emphasis on setting up the proper incentive mechanism to promote efficiency in the public sectors and to maintain that efficiency. In this particular sphere human factors are considered to be the prime theme that needs to be satisfied. Measures can be devised for a reward system, job accountability, career development, and professional pride--which also leads to job satisfaction. Only when principles of equity



and public-sector efficiency are the focus and hopefully properly enforced, can the will of the people thus will help pave the way for any government construction projects.

#### **D. SOUND LONG-TERM INDUSTRIAL POLICY**

Due to limited market size and lack of natural resources, Taiwan, in the past, has adopted a strategic protection policy. Before 1980s, incentive measures aimed at promoting basic industries had been placed on building electrical facilities, chemical fertilizer and, cement industry.

At the same time, protective trade policy, quota, tariffs etc., were adopted to promote import and export industries at different stages. Basically speaking, the government of Taiwan still adheres to those market oriented principles. In 1980s, the government has renounced selective promotional measures to cope with the changing economic context. Instead, government provided incentives have been focused on promoting R&D, improving management skills, product and brand name promotion and, personnel training. The policy has shifted from encouraging investment to promoting the upgrade of industries and liberalization of trade. The accumulated managing experiences from the past and the dynamics exhibited by contemporary businesses explicitly tell us that government should not place barriers to protect the domestic market. In this respect, the primary role of the government at the present stage should focus on establishing policy that gives heed to the adaptability of the changing economic context both in the domestic and international market. In this regard, four broad aspects presented below require special attention.

##### **1. Establishing the Infrastructures Necessary for a Sound Investment Environment**

Establishing ROC-in-AP requires constructing all necessary infrastructure. As a result, the government should encourage private investment. Government incentives play a vital role and experiences can be learned from Singapore.

##### **2. Establishing a Competitive Environment that Focuses on Equity**

At this critical time when Taiwan desires to enter the World Trade Organization (WTO), an open domestic market is vital to encourage free trade. In this regard, government policy should ensure a fair competitive domestic market that is open for all.

**3. Focusing on External Economic Effects that Encourage R&D of the Business Sectors**

Without R&D there will be no future growth. R&D in the business sector will promote competition; through competition, spill-over effect can be shared by all. Government policy should support business investment in R&D.

**4. Environmental Protection**

In today's world, environmental issues are a primary concern among nations pursuing economic growth. The importance of integrated efforts to protect the planet from deteriorating binds us all together. Therefore, ecological protection measures must be incorporated in the government decision-making process and eventually stipulated by law.



#### IV. ANALYSIS OF SPECIFIC MICROECONOMICS ISSUES

The primary focus of this chapter is a survey of quantitative models which are representative of the related macroeconomic perspective presented in Chapter III.

##### A. LONG TERM VISION

The ROC's long term goal is to become an "advanced developed country." For the past 40-plus years, the ROC has successfully created an economic miracle. The following model is based on ROC economist Dr. Lin's research [Ref. 5, p. 145]. Figure 1 explains how the Taiwan government has successfully developed her industrial structure and shows the government's future industrial structure.

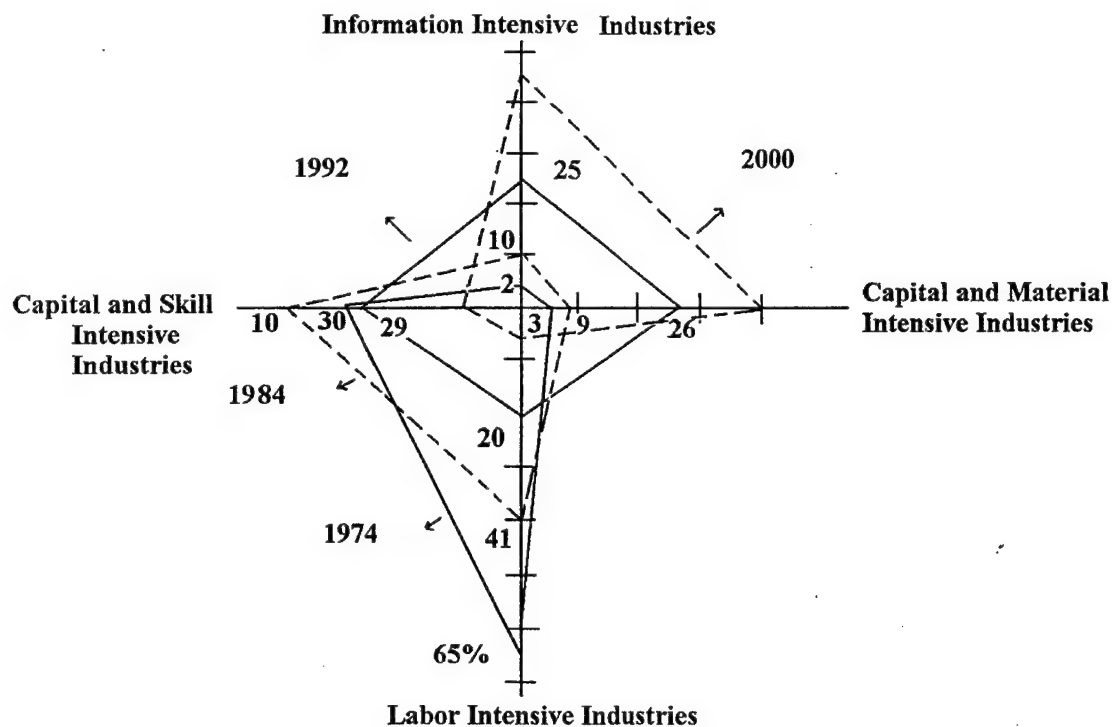


Figure 1. Labor and Production After [Ref. 5, p. 161]

In 1974, labor-intensive production was 65% of total production, skill-intensive production had reached 30% and material-intensive was only 3%. [Ref. 5, p. 162] Information-intensive production was at 2%. At that time, the Taiwan government wished to stabilize the economy because of a politically disruptive situation. Also, the government wished to create job opportunities for its population. The ROC was in the "developing country model." In 1984, labor-intensive output had decreased to 41%, skill-intensive output had increased to 40%, information-intensive output was 10%, and material-intensive output had increased to 9%. At that time, the Taiwan government wanted to focus development on heavy industry and petrochemicals to integrate upstream and downstream industries. The ROC relied heavily on imported intermediate goods and material for production and was in the "newly industrializing country model." In 1992, the Taiwan government set some strategic industrial policies to develop key technologies for the upgraded industries. With the rapid growth of the industrial structure, labor-intensive output decreased to 20%, skill-intensive output decreased to 29%, information-intensive output increased to 25% and material-intensive output increased to 26%, which is close to the "advanced developed country" model.

At this time, based on above successful government-oriented policies as well as ROC's labor productivity, the "Taiwan Economic Miracle" has become a model for all developing countries. However, today ROC cannot use its past protection policies, like high tariffs, quotas etc., to move towards the "advanced developed country model." ROC must attract foreign companies to invest in "material-intensive" and "information-intensive" industries to further promote domestic technology. Only by upgrading technology can ROC maintain its economic growth and become an "Advanced Industrial Country."

A country's economic development depends on whether it has a sound industrial structure; ROC cannot avoid that fact. ROC must adjust its industrial structure according to the "industrial structure development" model, to attract foreign investment and enable ROC to invest abroad. By doing so, ROC can take advantage of international

management resources including capital, materials, manpower, skills, markets, and information to offset national shortages in these areas. For this, the "multinational enterprise (MNE) model is the key factor for achieving success especially in a world of diminishing trade conflicts, developing markets, and an improving ROC industrial structure.

## **B. MULTINATIONAL ENTERPRISES (MNE)**

### **1. From The Enterprise Aspect**

For ROC, multinational enterprises (MNE) involve a foreign country's domestic enterprises choosing ROC as a base for investing in and exploiting the Asian-Pacific markets, including South-East Asia and Mainland China.

### **2. From The Macroeconomic Aspect**

MNEs will enable ROC to become a regional center for different economic activities; including manufacturing, telecommunication, media, transportation and financial services. The concept of a regional center is made possible through economic cooperation and trade with Asean Free Trade Area (AFTA) which includes Malaysia, Philippines, Singapore, Thailand, Indonesia. However, because of a lack of data, this analysis only considers the manufacturing center; it excludes other operational centers established by the ROC.

## **C. THE ROCS EXECUTIVE STRATEGIES**

### **1. Seek MNEs to Invest in High-Valued Industries**

With increasing labor costs, ROC's traditional labor-intensive industries, like the textiles and foods, have lost their comparative advantage relative to Mainland China and AFTA. The Taiwan government has chosen to support the following rising industries: [Ref. 5, p. 75]

- Telecommunication
- High-Grade Materials

- Information
- Aeronautical & Space
- Electronics
- Advanced Mechanic Auto-Systems
- Semiconductors
- Specific Chemical Products & Medicinal-Production
- Therapy & Health-Care
- Pollution-Prevention

These industries all have characteristics of greater capital, greater manpower, shorter production periods, intense competitiveness and high risk. The profits for these industries are relatively high, and more importantly, they are less dependent on natural resources. In summary, these industries match the economic characteristics of “market imperfection,” “rent,” “scale economies,” “learning economies,” and “external economies.” The market victory will belong to the first countries that can complete research and development, and exploit the necessary technology.

For the past forty-plus years, ROC has successfully accumulated capital, skill, management knowledge, and R&D knowledge. ROC is located in the pivot of East-Asia.

ROC should follow the following policies to attract foreign high-tech MNEs to invest and establish branches in ROC.

***a. Carry Out a Free Trade and Investment Policy***

Taiwan plans to carry out a free trade and investment policy by further lowering tariffs and eliminating non-tariff barriers. In 1999, the average nominal tariff rates will be lowered to 5% from its current value of 6.25%; the real tariff rate will be 4%. At the same time, area trade restrictions will largely be eliminated, though car exports and part of farm produce will still have tariffs. For the long run, most economists

believe that free trade is the best policy. The following model [Ref. 6, p. 230] (Figure 2) demonstrates the free trade policy.

In Figure 2, line  $QQ$  represents international prices,  $X$  represents exported goods and  $Y$  represents imported goods. Under free trade, the ROC's domestic production point is  $A_1$  while the consumption point is  $B_1$ . Assume ROC imposes tariffs on goods  $Y$ . Because the ROC is a small country, the tariffs-imposed will not affect international price, but they will raise  $Y$ 's domestic price. So, we can draw a line  $Q'Q'$  which is tangent at  $A_2$ , the new production point. The new domestic consumption point will reach  $B_2$ . At point  $B_2$ , we see, due to the imposed tariff, goods  $Y$ 's domestic price will rise and the relative domestic price of exporting goods  $X$ , and importing goods  $Y$  will be represented by  $Q'Q'$  which is flatter than line  $QQ$  under free trade. At that time, the utility level will move from  $U_1$  to  $U_2$  and Taiwan's welfare level is lowered as well. In the no trade case, the real utility level should be represented by  $U_3$ , where the indifference curve  $U_3$  is tangent to  $PPF$  at point  $A_0$ . Utility is lower without trade than  $U_2$ .

Even though a free trade policy is most favorable to ROC, according to above analysis, the ROC should consider two premises when applying a free trade policy: infant industry concerns and economic adjustments.

(1) **Infant Industry Argument for Protection.** From a static trade benefit viewpoint, free trade policy will be superior to protection policy given a limited resource allocation and a fixed technology base. On the other hand, free trade in the context of the economic development process, that is, from a dynamic standpoint, may not be the best course of action. For example, ROC is developing the domestic car and aeronautical industries. The Taiwan government may use tariff protection to limit imports, enlarge the production scale and upgrade the technical level in these industries. If scale economies are significant, the production function will improve and production cost will decrease. Ultimately, these two industries may become competitive.



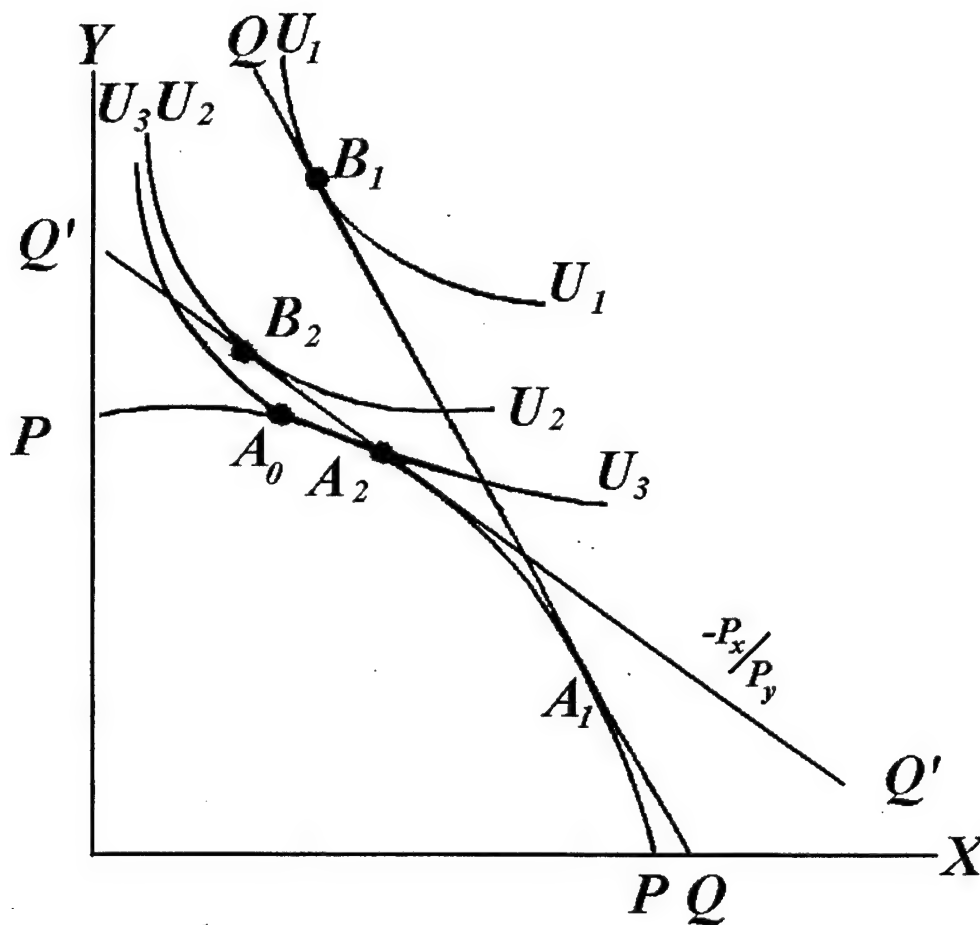


Figure 2. Free Trade as the Best Policy After [Ref. 6, p. 230]

Table 1 illustrates a hypothetical example. In this example, ROC should currently specialize in producing computers. However, in the future the car industry will become more competitive if ROC captures scale economies, learning

economies (through experienced employees) and external spillovers from other industries.

		ROC-Taiwan	Foreign Country
<b>Current</b>	Car (One Unit)	15	13.0
	Computer (One Unit)	1	1.2
<b>Future</b>	Car (One Unit)	10	13.0
	Computer (One Unit)	1	1.2

Unit: in Thousand Dollars

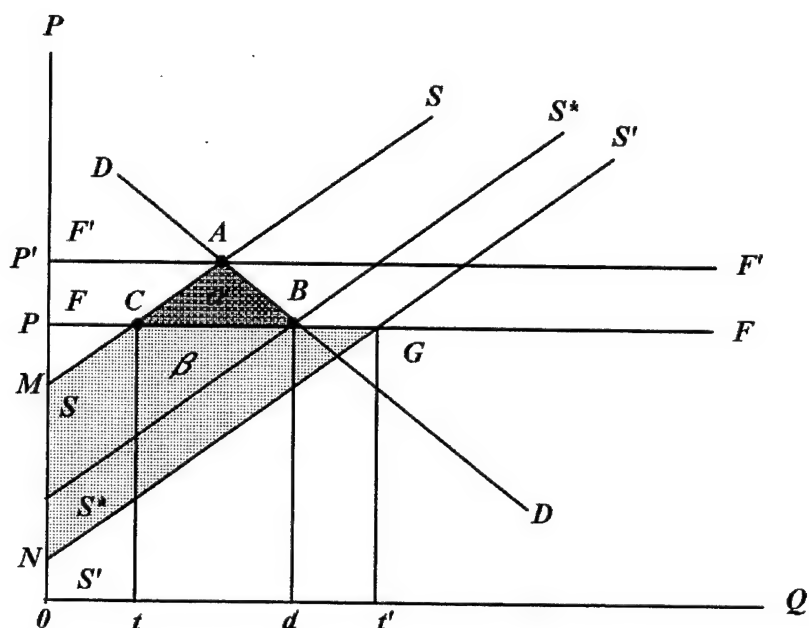
**Table 1. Improving Production Function**

Usually, this policy is called the “Infant Industry Argument for Protection,” which was first advocated by American economist Alexander Hamilton and German economist Friedrich List. [Ref. 9, p. 233] However, a related theorem is discussed in J. S. Mill’s “Principles of Political Economy” (1848). According to his view, “Any industry should be discomparative in the beginning to be protected, and could become comparative one after a period protection.” Figure 3 illustrates this point. [Ref. 9, p. 233]

In Figure 3, the horizontal axis  $Q$  represents the quantity of one good, the vertical axis is its relative price,  $P$ ,  $DD$  is the demand curve (including importing),  $SS$  is the domestic supply curve, and  $FF$  is the foreign supply curve. Taiwan is considered a small country, so  $FF$  is parallel to the horizontal axis. In free trade, the domestic price and international price is  $OP$ . At this time, Taiwan consumes  $Od$  ( $Ot$  units are from domestic production while  $td$  are imported). Now, assume Taiwan considers  $X$  good as an infant industry and decides to impose a prohibitive tariff rate (equal to  $PP'$ ) then the international supply curve moves to  $F'F'$ . Domestic price now rises to  $OP'$  and international price is still  $OP$ .

Assume, after some period of protection, domestic producers have increased production and this leads to a gradual cost reduction. Then, the domestic supply curve moves right. When it moves to  $S^*S^*$ , domestic prices are equal to international prices and tariff protection is unnecessary. Taiwan can remove the tariff and enter free

trade. If production continues to grow, then the domestic supply curve may move further toward right, for example to  $S'S'$ . Then Taiwan can become an exporter. At that time, domestic firms produce  $0t$  and export  $dt'$ ,  $0d$  is consumed domestically.



**Figure 3. Infant Industry Argument for Protection After [Ref. 6, p. 233]**

However, in Bastable's view, the potential Mill identified is just a necessary not a sufficient condition for protection. Bastable cited two other conditions [Ref. 10, p. 238].

- The protected industry has to grow while protected.
- The benefits from protection have to be greater than the losses during the protection period.

In fact, Bastable's conditions include Mill's conditions, so, they are called the Mill-Bastable standard. The Mill-Bastable standard is based on consumer's and producer's surplus (See Figure 3). Consumer surplus measures the amount by which consumer value exceeds the consumers' payments. It is the area between the demand

curve and consumer price as output varies from zero to the quantity consumed. Producer surplus measures the amount by which producers' revenues exceed their variable production costs. It is the area between the price producers' receive and the supply curve as output varies from zero to the quantity produced.

Assume Taiwan imposes a prohibitive tariff rate, then consumer surplus decreases by area  $ABPP'$  and producer surplus increases by area  $ACPP'$ . The net result is a welfare loss of  $ABC$ . Because Taiwan imposes a prohibitive tariff rate, there is no offsetting no tariff revenue.

If, after protection, the domestic supply curve moves to  $S^*S^*$ , Taiwan can remove the tariff. If the supply curve further shifts to  $S'S'$ , consumer surplus returns to its original value and producer surplus increases by area  $GCMN$ . Thus, there is a net increase in surplus value.

So, based on the Mill-Bastable standard, the final benefits must be larger than the loss that resulted from protection. To examine this, we can compare the shaded areas  $\alpha$  and  $\beta$ ;  $\alpha$  represents area  $ABC$  and  $\beta$  represents area  $GCMN$ , respectively. If  $\alpha < \beta$ , protection is worthwhile. Otherwise it is not. However, the losses and benefits do not accrue simultaneously. We should use a proper discounted rate ( $r$ ) before we compare them. We need to compare the present value of the loss with the present value of future benefits after returning to free trade. We can use the following formula to express this:

$$\sum_{i=1}^k \frac{\alpha_i}{(1+r)^i} < \sum_{i=k+1}^n \frac{\beta_i}{(1+r)^i}, \quad (1)$$

$1, \dots, k$ , mean protection periods.

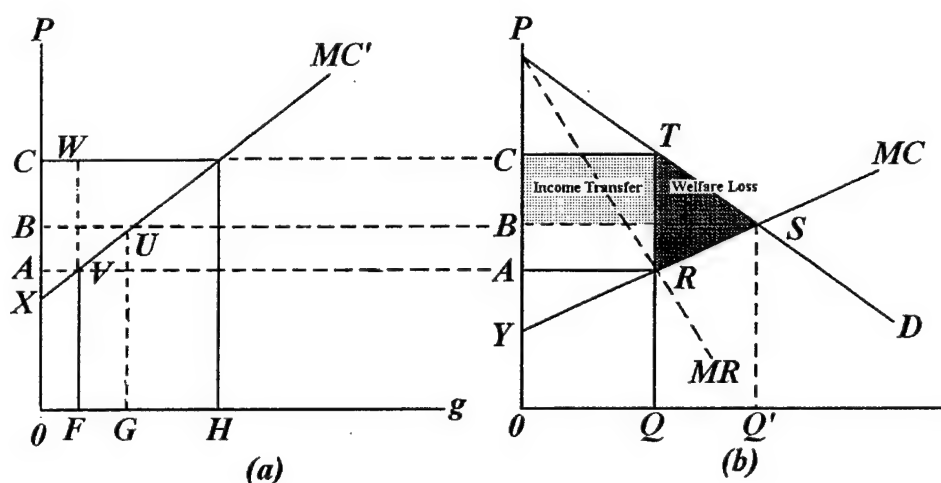
If condition (1) holds, then this infant industry is worth protection, otherwise, it is not.

**(2) Difficulty in Adjusting Economic Structure.** When production factors are not easily transferred among industries, and factor prices are inflexible, fulfilling free trade policy can cause serious unemployment. The following model (Figure 4) demonstrates this case. [Ref. 6, p. 239]

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**b. Form Strategic Alliances**

The Taiwan government should encourage local firms, with the necessary basic skills, to upgrade their production processes, due to the gradually lost comparative advantage. These firms should be encouraged to cooperate with foreign enterprises to form a strategic and technical consortium joint venture by providing local and area market information services through modern telecommunication facilities. In alliances, these firms will not be allowed to compete with each other and this will enlarge overall profits. The following model (Figure 5) shows how this works:



**Figure 5. Alliances After [Ref. 6, p. 228]**

On the left side of Figure 5,  $MC'$  represents an individual company's marginal cost. On the right side,  $MC$  represents the industry marginal cost and potential supply curve. This is the outcome of adding all companies' marginal costs horizontally. In perfect competition, the total output equals  $OQ'$  and price is  $OB$ , while individual company's supply is  $OG$ , which is where market price equals its marginal cost. Operating profits for the whole and each company are the triangles  $YSB$  and  $XUB$ , respectively.

Alliances (or cartels) are somewhat like a monopoly,  $OQ$  is the new output which is the intersection of  $MR$  and  $MC$ . Because  $OQ < OQ'$ , each company in an alliance

has to decrease its output to  $OF$  where the profit maximizing industry marginal cost equals the firm's marginal cost; industry price is  $OC$ . The total alliance's operating profit is in area  $YRTC$  and is larger than that of perfect competition. The individual company's operating profit is area  $XVWC$ . To calculate the impact on the firm's profit, compare area  $XVWC$  and  $XUB$ . If some companies' decrease their output greatly, then their profits may be less. However, total alliance profits increase. Therefore, firm's profits must increase on average. The overall profits could be shared by all partners.

*c. Seek MNE*

ROC should seek MNE to transfer advanced technology, enlarge international markets, and diminish trade conflict. The following section explains how multinational enterprises (MNEs) work to increase markets, eliminate ROC's trade conflict with other countries, and promote industrial development.

Since 1980, MNEs have mushroomed as a result of the U.S.A.'s strong trade protection policy and the attraction of the European single market (See Table 2). [Ref. 5, p. 144]

	World Investment	World Output	Manufacturing Industry	Non-Manufacturing Industry	Out/Manufacturing Industry
1980	4,713	19,012	2,969 (63%)	1,744 (37%)	6.4
1992	20,036	28,188	6,412 (32%)	13,624 (68%)	4.4

Data from Taiwan Executive Yuan

**Table 2. MNEs and Trade Policy**

**D. MNE INTRA-FIRM TRADE THEOREM**

**1. MNE**

To be successful in international competition, an enterprise needs to offset its national resource and management shortages and promote an "international industry division of labor." This can be accomplished by international investments. International

investment exploits the international resources of capital, material, manpower, skills, markets, information, and management knowledge.

## 2. International Industry Division of Labor Theorem (IIDL)

According to one Japanese economist, international industry division of labor follows the pattern dictated by differences in worldwide distribution of raw materials, labor skills, and cost. [Ref. 5, p. 146] This pattern is consistent with "comparative advantage" principals. Figure 6 shows the pattern and illustrates this point:

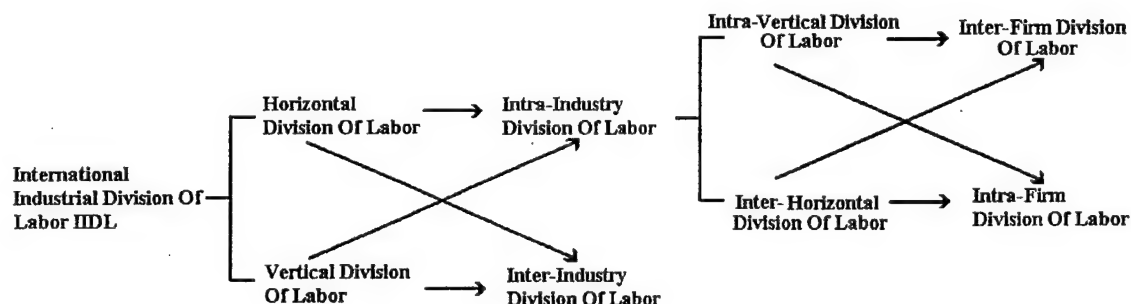


Figure 6. International Industry Division of Labor After [Ref. 5, p. 146]

## 3. MNE Intra-Firm Trade Theorem

Because enterprises want to enlarge their international market and at the same time avoid the barriers of international trade protection policies, they transfer production abroad. Foreign production replaces exports and increases total sales by promoting the transferred country's technology. MNEs can better balance international trade.

MNE intra-firm trade balance effect consists of the following: [Ref. 1, p. 147]

### a. *Investment Countries' Surplus Decreases*

(1) **Export Replacement** MNEs set up branches abroad and use foreign production to supply foreign markets. Through this strategy, they diminish their parent firms' exports. The relationship is:



$$\begin{aligned} \text{Amount of Replaced Exports} = \\ (\text{Total Sales Abroad} - \text{Exports to Mother Countries}) \times \\ \text{Ratio of Replaced Exports} \end{aligned} \quad (2)$$

(2) **Adverse Imports.** Branches abroad can sell production back to the mother countries which increases imports. From a trade view, this can decrease the home countries' trade surplus. The relationship is:

$$\begin{aligned} \text{Amount of Adverse Imports} = \\ \text{Total Sales Abroad} \times \text{Ratio of Adverse Imports} \end{aligned} \quad (3)$$

*b. Investment Countries' Surplus Increases*

(1) **Induced Exports.** Branches abroad import capital, intermediate goods and parts from the mother country. This increases exports from the home country. The relationship is:

$$\begin{aligned} \text{Amount of Induce Export} = \text{Total Purchasing} \\ \times \text{Import Ratio from Investment Countries} \end{aligned} \quad (4)$$

(2) **Reduced Imports.** Because branches abroad can purchase necessary materials locally, the parent firms decrease their imports of materials and parts.

Analyzing this MNE intra-firm trade balance effect yields the following conclusion. At the early stage of production, the effect of export replacement and adverse imports is low. However, as branch companies grow, these effects will rise as intermediate goods and parts are purchased locally. RECs trade surplus will fall over time which decreases trade conflict between the two countries. Figure 7 illustrates this model.

The following example (Table 3) illustrates this theorem.

	Ratio of Export Replacement 50%	Ratio of Export Replacement 25%
Situation	^30	15

**Table 3. Ratio of Replace Export**

Assumption:

- (1) ^ means a deficit
- (2) Investment: 100m and sales ratio abroad 200% = 200m
- (3) Amount of induced exports 80m
- (4) Ratio of adverse imports 10% = 20m

Formula:

$$= (\text{Sales Abroad} - \text{Amount of Adverse Import}) \times \text{Ratio of Export Replacement} + \text{Amount Of Adverse Import} - \text{Amounts of Induce Export} \quad (5)$$

Explanation:

For a ratio of export replacement of 50% :  $(200 - 20) \times 50\% + 20 - 80 = 30$

For ratio of export replacement of 25%:  $(200 - 20) \times 25\% + 20 - 80 = -15$

Now let us examine the real situation as it exists in Taiwan

R.O.C. How does MNE intra-firm trade affect the Taiwan, R.O.C. trade structure?

1991	Amount		International Trade		MNEs Trade	
Total Taiwan's Export	81.6		81.6			
Total Taiwan's Import	55.4		55.4			
			<b>Total</b>	<u>137.0</u>		
			<b>Difference</b>	26.2		
MNEs' Investment in Manufacturing Industry	11.0					
MNEs' Sales Abroad	15.4	32.4%				
MNEs' Local Sales	32.2	67.6%				
<b>Total Sales</b>	47.6				47.6	
MNE's Purchases Abroad	12.5	46.3%		15.4		
MNEs' Local Purchases	14.5	53.7%		12.5		
<b>Total Purchases</b>	27.0		<b>Total</b>	<u>27.9</u>		27.0
			<b>Surplus</b>	2.9	<b>Total</b>	<u>74.6</u>
					<b>Surplus</b>	20.6
Surplus International Trade - Surplus MNE Trade 2.9 - 20.6 = -17.7						

Units Billions

**Table 4. Taiwan R.O.C. Trade Structure**

In Table 4 there is a 17.7 billion loss uncounted for. This proves that ROC can successfully accept technology transfer due to the high ratio of export replacement. So, MNE investments contribute to ROC's industrial progress and formulation.

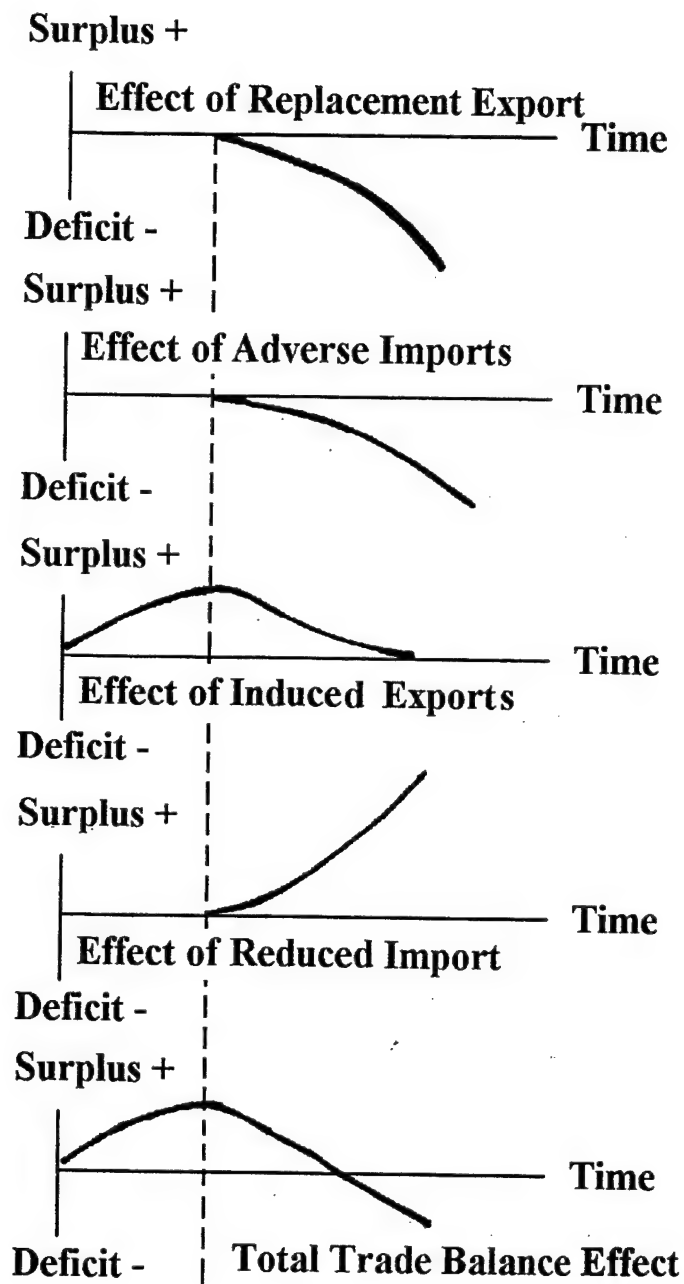


Figure 7. MNE Intra-firm Trade Balance Effect From [Ref. 5, p. 149]

To decrease trade conflict and avoid trade retaliation, ROC should develop MNE intra-firm trade in those countries that have large deficits in trade with ROC and raise the "effect of export replacement" and "effect of adverse import" to increase sales. This will decrease the trade surplus. On the other hand, ROC should attract MNEs which produce high-valued products to invest and establish branches in ROC. ROC can improve her production technology and develop her own "industrial structure model."

#### **E. TAIWAN INDUSTRY RESEARCH AND DEVELOPMENT CENTER (TIRD)**

The Taiwan government has chosen, according to the "Rent," "Market Imperfection," and "Newly Rising Industries" models, strategic industries to upgrade. These industries are funded by TIRD to engage in R&D and create demonstration factories. In addition, TIRD is training some experienced design and manufacturing engineers who TIRD believes can help enterprises' growth in the future.

#### **F. ENLARGED REGIONAL INVESTMENT AND CREATE MARKETING NETWORKS**

ROC's investments are focused on Mainland China (36%), U.S.A. (33%), and Southeast Asia (27%). Thereafter, ROC should divert its regional investment and choose the best area to produce in accordance with comparative advantage and products with the best division of labor. The Taiwan government has passed a plan called "Financing Policies in Encouraging Civil Industries' Investment in South-America and Europe." By doing so, ROC can lower costs and enhance international competition.

Taiwan is an island country which has few natural resources and is highly dependent on its export trade. The ROC cannot isolate itself from international society and makes every effort to join international trade organizations. Because free trade is a new trend, ROC must abide by the World Trade Organization's basic principles and

domestic industrial protection policy agreements of the Uruguay round of the General Agreement on Tariffs and Trade (GATT).

#### **G. THE INCREASING IMPORTANCE OF THE ASIAN-PACIFIC ECONOMY**

According to statistics, the Asian-Pacific region, especially for the East-Asia area, has attained high economic growth. In 1992, the Asian-Pacific area GDP accounted for 20.7% of total world GDP, compared to 7.0% in 1960; a 33% share is estimated by the year 2010. Undoubtedly, the Asian-Pacific region is becoming a new economic center. ROC should maintain economic cooperation with the countries of AFTA to further promote ROC's importance in Asian-Pacific region, by developing closer complementary economic relationship with those countries.

Based on the above objectively economic changes of environment, the Taiwan government has planned to develop ROC as the "Asian-Pacific Operational Center (APOC)" so that ROC can successfully march toward the 21st century and seek another economic miracle.

#### **H. INCOME DISTRIBUTION**

The primary purpose of establishing the operational centers is to expedite Taiwan's economic growth, namely, create economic wealth for the Taiwan population. The following model and analysis will explain the long-term changes in income distribution during the process of implementing the economic policies in Chapter III. The goal of this chapter is to express the real phenomenon of income distribution rather than offer a solution for the redistribution of wealth.

This section will use Kuznet's hypothesis to examine income distribution. Kuznet suggested that the economy can be divided into two separate sectors with different characteristics. [Ref. 7, p. 207] One sector is the agriculture sector (Sector A); the other is the nonagriculture sector (Sector B). It is further assumed that the per capita income in Sector B is always higher than that of Sector A. It is also assumed that the inequality of

income in Sector B is equal to or greater than that in Sector A. One of Kuznet's useful discoveries is that, even though the per capita differential between Sector A and B is constant and the same for the degree of inequality within each sector, the shift of population from Sector A to Sector B will cause an initial widening of inequality between the two populations. This initial inequality is followed by a later reduction in the difference. The following example makes this clear.

Let Sector A income be \$100, Sector B income be \$200, and the entire population be 100. At first, everyone is in Sector A, and the total income is therefore \$10000. Now assume one person shifts from Sector A to Sector B; The total income will rise to \$10,100. At this time, the income share of the top 20% of the population will rise from 20% to 20.8% of the total income. The income share of the bottom 20% of the population will fall to about 19.8%. Accordingly, inequality will increase. If the transfer continues, the average income of top 20% people will keep rising until exactly 20% of the population of Sector A shifts to Sector B. At that time, the total income is \$12,000, and the top 20% of the population has 33.3%, of the total income, and the bottom 20% of the population has 16.7% of the total income. Following this point in time, the average income of top 20% will begin to decline, until it reaches the same percentage of total income as when the entire population was in Sector A. However, the difference in income will continue to decrease for the bottom 20% until 80% of the population shifts to Sector B. At that time, when total income is 18,000, the income share of the bottom 20% is 11.1%, and the income share of top 20% is 22.2. From that point on, the average income share of bottom 20% begins to recover until it reaches its original value of 20% and the entire population has shifted to Sector B. Based on this example, the author can draw the following conclusions:

- At beginning, the effect of operational centers development will cause the rich to become richer and the poor to become poorer, at least in the sense of a percentage of total Taiwan income.

- When the income share of the rich stops increasing, the income share of the poor will continue to fall and this leads to a situation where the poor are much poorer.
- The question is: is there a 'trickle down' of the benefits from operational centers' development?

A superficial study like the example above can be misleading. When Kuznet studied this subject, he lacked empirical information on the share changes of the bottom 20%. Kuznet lacked the knowledge that income for the bottom 20% of population begins to turn up later than that of the top 20% of the population. Accordingly, when Taiwan implements the operational centers this problem must be addressed.

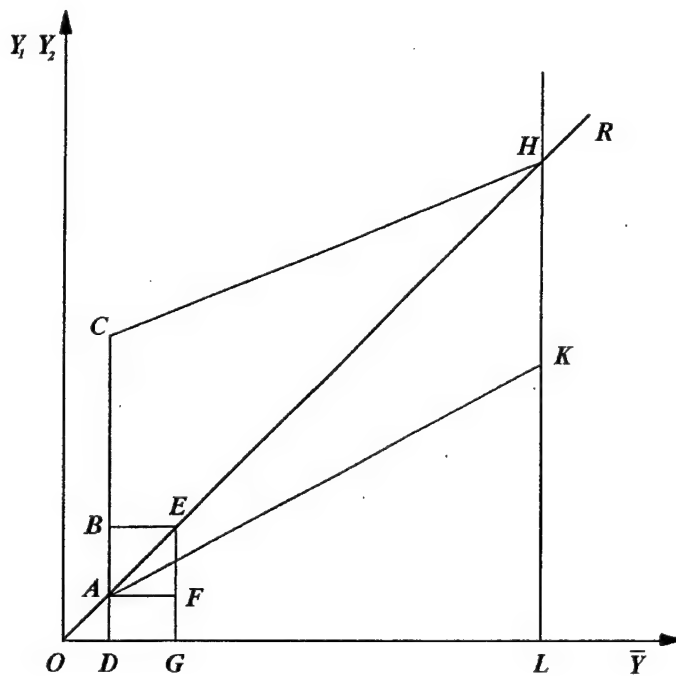
Though Kuznet's two sectors are agriculture and non-agriculture, in Taiwan's case, this could be interpreted as the "Hi-Tech" Sector B, or the technically progressive sector, and the "Traditional" Sector A, or the sector that has been losing its comparative advantage. Here the reader should not be misled by the terms "Hi-Tech" and "Traditional." The real distinction between these two sectors should be defined as:

- The sector which can improve its production skill through learning-by-doing and R&D etc.
- The sector where the production level is falling due to natural (labor costs) obstacles and the cycle of lower productivity and low investment.

However, as time passes, the production level could be improved, for the traditional sector, though not necessarily at the same rate as the Hi-Tech sector.

Figure 8 demonstrates the distribution of income. [Ref. 7, p. 213] In Figure 8, the vertical axis represents the mean income in Sectors A and B (represented by line  $O, Y_1$  &  $Y_2$ ), while the horizontal axis measures the mean income of the entire economy (line  $O\bar{Y}$ ). Line  $OR$  is  $45^\circ$  angle to the axes of both  $\bar{Y}$  and  $Y_1$  &  $Y_2$ . Initially assumes that  $Y_1$  and  $Y_2$  are held constant and can be measured by  $AD$  and  $BD$ . At first the entire population is in Sector A, so the mean income of the entire country is  $OD$ . When the workforce begins shifting to Sector B, an increasing proportion of incomes are at the

level of  $BD$ . Mean income of the whole economy moves from point  $D$  to point  $G$ .  $G$  represents the mean income in the country after everyone has shifted to Sector B. However, this model is too simplistic to use in “learning industrial sectors;” specifically, it has three shortcomings:



**Figure 8. Distribution of Income From [Ref. 7, p. 213]**

- The production level in Sectors A and B do not change in accordance with operational development and, in particular, are not affected by the proportion of the population in “Hi-Tech” Sector.
- Accordingly, mean income of the whole economy cannot go beyond the original mean income in Sector B.
- The mean income of the population remaining in sector A falls far behind the mean income of the whole economy.



All of the above shortcomings are part of the purpose for establishing Asian-Pacific Centers in Taiwan. So, they must be addressed.

Now suppose Sector B is a high-tech sector with average income equal to  $CD$  rather than  $BD$ . Furthermore, average income in Sector B increases over time. Similarly, the average income in Sector A depends in part on the number of people working in Sector B. As labor shifts to Sector B, marginal productivity, and hence average income, increases in Sector A. The revised model in Figure 8 could be represented by  $AK$  and  $CH$ . Now the mean income in Sector B is  $CD$ . Over time, when people shift from Sector A to B, the average income in Sector B will rise, due to innovation, improvements in R&D and management techniques, and learning-by-doing. This increase will be reinforced by scale economies both internal and external to some enterprises. Thus, over time average income in Sector B will increase to  $H$ . However, the shift of population from Sector A will also cause a chain reaction and rise Sector A's average income. Thus, over time average income in Sector A will increase to  $K$ . This appears to be a reasonable description of Taiwan's economy and leads to the following conclusion about the change in  $\bar{Y}$ .

- $\bar{Y}$  is affected by  $Y_1$  and  $Y_2$ .
- $\bar{Y}$  is affected by the increase in the proportion of the population drawing incomes from Sector B. With processing in operational development, it can be assumed that  $Y_2$  is always greater than  $Y_1$ , no matter the ratio of  $Y_2$  to  $Y_1$ .

When the operational centers are finished and the population has shifted to the "Hi-Tech" sector, then the position in Figure 8 should be at point  $H$ . The same situation as in the first model, where the inequality in income should initially increase as the proportion of the population in Sector B increases. However, average incomes in both sectors will improve over time.

The Gini coefficient is used to estimate the degree of inequality in the income share and where it will reach its maximum value depending on the position and shapes of

*AK* and *CH*. Unlike Figure 8, *AK* and *CH* are not necessarily straight lines. *AK* and *CH* represent a reduced form of the relationship between  $Y_1$  and  $\bar{Y}$ , and the relationship between  $Y_2$  and  $\bar{Y}$ . Mathematically then the relationship is:

$$Y_2 = f_2(t), \quad (6)$$

where  $t$  is the time elapsing since the beginning of the operational centers and  $f_2 > 0$ .

The relationship for  $Y_1$  is:

$$Y_1 = f_1(Y_2, \rho), \quad (7)$$

where  $\rho$  is the promotion of people to Sector B. Here,  $\frac{\delta Y_1}{\delta Y_2} > 0$ , and  $\frac{\delta Y_1}{\delta \rho} > 0$ .

The rate of promotion to Sector B ( $\rho$ ) is:

$$\frac{d\rho}{dt} = f_3(Y_2 - Y_1) > 0, \quad (8)$$

provided that  $Y_2 > Y_1$ . To simplify and reduce the number variables then:

$$\bar{Y} \equiv (1 - \rho)Y_1 + \rho Y_2. \quad (9)$$

Equation 8 involves five variables, i.e.,  $Y_1, Y_2, \bar{Y}, \rho$  and  $t$ . Simplifying to two variables by eliminating the other three variables lead to the following equations:

$$\begin{aligned} Y_1 &= F_1(\bar{Y}) \\ Y_2 &= F_2(\bar{Y}) \\ \bar{Y} &\equiv (1 - \rho)Y_1 + \rho(Y_2) \end{aligned} \quad (10)$$

Because,  $\frac{dY_2}{dt} > 0, \frac{dY_1}{dt} > 0, \frac{\delta \rho}{\delta t} > 0, F_1' > 0$  and  $F_2' > 0$  Equation 7 can be redefine as

$\bar{Y} \equiv (1 - \rho)Y_1 + \rho(Y_2)$ . Hence, if we know the existing income distribution within the traditional and Hi-Tech Sectors, we can estimate the redistribution of income given some specific value of the  $Y$ s. Of course, estimating these two functions,  $F_1$  and  $F_2$ , is an econometrics problem and is beyond the scope of this study.

From the above analysis, what is useful information for the Taiwan government in relation to the operational centers development? Primarily that it is possible to compare

the income inequality between, before and after the construction of the operational centers based on some plausible assumptions. It can be reasonably assumed that the shift of manpower from the low-paid traditional industries to the high-paid high-tech industries, in accordance with the process of the development of the operational centers, will gradually enlarge the inequality of the income share. This will happen in the early stage of the transfer and gradually decline in the later stages. The top 20% of the population will tend to reach maximum income at an earlier point in time than the bottom 20% reaches its minimum income.

Figure 9 and Table 5 shows Taiwan income inequality from 1960 to 1990. Data is from Taiwan Auditing Department of Executive Yuan, 1991. Before 1980, economic growth was accompanied by an increase in the equity of the wealth distribution. This is an ideal model for economic development. However, since 1980, Taiwan income distribution has been deteriorating yearly, although Taiwan's Gini coefficient is still lower than that for other advanced countries. Taiwan should pay attention to this situation while it is developing the operational centers.

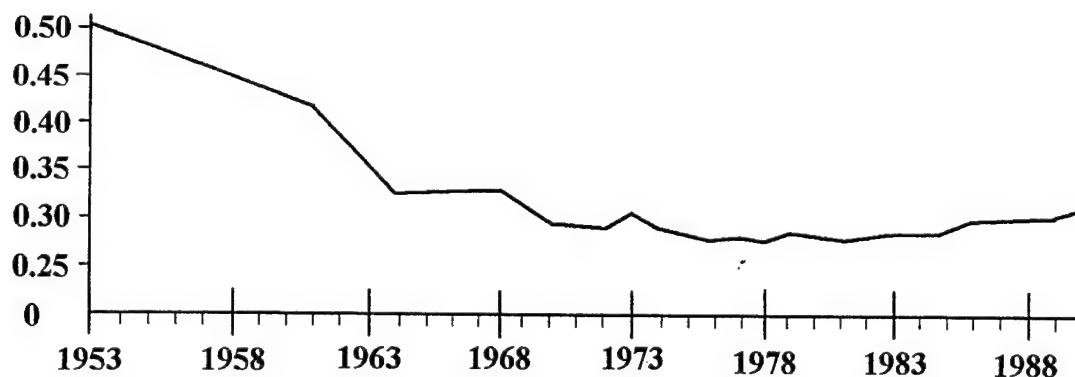


Figure 9. Taiwan Gini Coefficient After [Ref. 8, p. 335]

Year	Coefficient
1978	0.287
1980	0.277
1982	0.283
1984	0.287
1986	0.296
1988	0.303
1990	0.312

**Table 5. Taiwan Gini Coefficient**

## **I. CONCLUSIONS**

The whole idea in Chapter IV is to use economic models to support policies mentioned in Chapter III. Hence, this chapter fulfills several functions.

The main goal for the Asian-Pacific operations center is to stimulate Taiwan's movement toward advanced developed country status by developing some specific industries. In general, these industries match the economic characteristics of market imperfection, rent, scale economies, learning economies, and external economies. The country that can exploit the necessary technology first will capture these industries.

Developing these specific industries successfully will require Taiwan to transfer advanced technology from developed countries and set up better trade relationships. Here, the MNE plays an important role in integrating these objectives. With MNE's help, Taiwan can get sufficient technology and decrease their trade surplus.

The MNE is an ideal model. Every country wants to increase its profit from other countries. So, to implement the MNE model successfully, Taiwan should cooperate with other countries based on the tit-for-tat principal. Only countries if sincerely cooperate in trade can they get the maximum benefit for all countries.

To express openness to trade partners, Taiwan decided to revise its current trade protection policies as mentioned in Chapter III. Though a free trade policy is most

favorable to ROC, the ROC should consider two premises which are infant industry concerns and economic adjustments, and take a step-by-step approach.

Finally, this chapter discusses income distribution. The ROC policy is designed to enlarge Taiwan's wealth. If this policy is successful, then the total social wealth will increase. However, another important aspect is worth noticing. At the beginning, the operational centers' development will cause the rich to become relatively richer and the poor to become relatively poorer, though the poor will be no worse off in absolute terms, and will probably be better off. So, we should compare the income inequality before and after developing the operations centers to get the correct analysis.

## V. CONCLUSION

This paper examines the Republic of China's attempt to develop itself into an operations center for the Asian-Pacific region. The primary concerns are two: 1) on the business level, can Taiwan serve as a stepping stone for local and multinational businesses to invest in and develop Asian-Pacific markets, including Southeast Asia and Mainland China, 2) on the macroeconomic level, can it become a strong base for developing all kinds of trade and economic relations with Asian-Pacific nations, making it a center of business activities, for such things as:

- Manufacturing
- Transshipment
- Finance
- Telecommunications
- Media Operations

The diversified presentation of macro and micro perspectives addressed in this study reflects an unbiased opinion of the issues. The macro perspective argues that, Taiwan has some advantages in becoming a regional operations center: a solid manufacturing base, an abundant supply of high-tech manpower, a geographically convenient position, an attractive domestic market, outstanding managerial skills, and a well-developed industrial network of local enterprises. It is the political stability that plays a critical part in achieving that dream. The micro perspective then looks into more concrete measures, models of achieving the goal of ROC-in-AP. These models are:

- Seek Multinational Enterprises (MNE) To Invest In High-Valued Industries
- International Industry Division of Labor (IIDL)
- MNE Intra-Firm Trade Theorem

- Enlarged Regional Investment and Create Marketing Networks
- Income Distribution Effect

As Taiwan's economic focus shifts to heavily in Mainland China, Taiwan must pay special attention to the politico-economic interactions on both sides of the Taiwan Strait. The first measure is not to provoke the PRC by advocating Taiwan independence. The next measure is to use Taiwan's capital investment to promote a market system change in Mainland China. For Taiwan, it is true that even the most feasible and sound policies cannot guarantee successful results. Conversely, this also means that poorly conceived policies can be successful given there is a strong will of the people to make it happen. This is where political stability comes into play. Better policies are more likely to succeed than poor ones. Taiwan has become more and more liberalized, both in the political and business trade spheres. Taiwan is also losing the important traditional values of a hard working people, solid consensus, and, the value of education along its road to economic prosperity. The government is placing more and more capital resources into building large tangible projects. What is the share for the true potential force of Taiwan's society; education where the future lies? Economic prosperity is not everything, it takes other things that are as equally important to create a viable society. Without those fundamental values acting as pillars of economy and society, any well conceived policies or strategies simply will not serve its original purposes. Fortunately, the government of Taiwan has begun to notice the value and importance of education in the last few years. The authors hope that it's not too late!

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